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Article 19
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Claims

1. Machine for superfinishing workpieces through honing or precision grinding with a tool spindle which can be rotationally driven and can receive a tool, and a motor for rotating the tool spindle, wherein the tool spindle is disposed on a carriage which is disposed on a machine frame, and can be displaced in the direction of the axis of rotation of the tool spindle via an adjusting device, characterized in that the adjusting device comprises a linear electric motor (18) having a flat primary part (13) and a secondary part (17) disposed thereon such that it can be linearly displaced, wherein one (13) of the primary part/secondary part (13, 17) components of the linear motor (18) is disposed on the machine frame (16) and the other component is disposed on the carriage (12) bearing the tool spindle (7).
2. Machine for superfinishing workpieces through honing or precision grinding according to claim 1, characterized in that the linear motor (18) is a frequency-controlled synchronous motor whose primary part (13) is formed as a stator and whose secondary part (17) is formed by a permanent magnet, wherein the secondary part (17) is integrated in the carriage (12) bearing the tool spindle (7), with the speed being controlled through frequency conversion.
3. Machine for superfinishing workpieces through honing or precision grinding according to claim 1 or 2, characterized in that the tool spindle (7) is driven by an electromotor (9) formed by a stator (25) and rotor (26), wherein the stator is disposed in the tool spindle housing (8) supported on the carriage (12) and the rotor (26) is disposed on the outside on the tool spindle (7) and within the stator (25).

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4. Machine for superfinishing workpieces through honing or precision grinding according to any one of the claims 1 through 3, characterized in that for delivering a processing body (5; 300) of the tool (4; 306) onto the surface of the workpiece (3; 301) to be processed, a connecting rod (110) is disposed within the tool spindle (7) to co-rotate and be displaceable in the direction of the axis of rotation (A), and displacement of the connecting rod (110) is realized by an electric servomotor (10) which is flanged to the spindle housing (8) comprising the tool spindle (7), and a transmission (47, 49, 53) is provided between the servo motor (10) and the connecting rod (110) which converts the rotary motion of the servomotor (10) into a linear adjustment motion of the connecting rod (110).
5. Machine for superfinishing workpieces through honing or precision grinding according to claim 4, characterized in that the servomotor (10) is disposed coaxially with respect to the axis of rotation (A) of the tool spindle (7).
6. Machine for superfinishing workpieces through honing or precision grinding according to claim 4 or 5, characterized in that the driven shaft (150) of the servomotor (10) rotates a coupling piece (49) which has a section (47) which is provided with a thread (56') which cooperates with the thread (56) of an adjusting sleeve (53) which cannot be rotated but can be displaced in a longitudinal direction to displace the coupling piece (49) in a longitudinal direction upon rotation of the driven shaft (150).
7. Machine for superfinishing workpieces through honing or precision grinding according to any one of the claims 1 through 3,

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characterized in that a connecting rod (120) is disposed within the tool spindle (7) which co-rotates and is disposed to be displaceable in the direction of the axis of rotation (A) for delivering a tool (300) onto the surface (305) of the workpiece (301) to be processed, wherein the connecting rod (120) is displaced by a further linear motor (200) whose runner (201) acts on an adjusting sleeve (253) which can be displaced in the longitudinal direction but not be rotated within a coupling housing (51) disposed on the spindle housing (8), the adjusting sleeve (253) receiving the connecting rod (120) such that it can be rotated but not displaced.

8. Machine for superfinishing workpieces through honing or precision grinding according to claim 7, characterized in that the further linear motor (200) is received in a clamping plate (210) which is flanged to a linear extension of the coupling housing (51).
9. Machine according to any one of the claims 4 through 8, characterized in that the tool is a honing tool (4) which comprises radially adjustable honing strips (5) which are adjusted through a widening bar (11) which is coupled to the connecting rod (110).
10. Machine according to any one of the claims 7 or 8, characterized in that the tool coupled to the connecting rod (120) is a precision grinding tool (300) which engages with the workpiece (301) in the direction of longitudinal displacement of the connecting rod (120) and the precision grinding tool (300) is coupled to the connecting rod (120) in the direction of engagement with the workpiece (301).